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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/886,628

06/21/2001

Kevin L. Baum

CR00254M

6149

22917

7590

10/24/2005

MOTOROLA, INC.

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IL01/3RD

SCHAUMBURG, IL 60196

EXAMINER

AHN, SAM K

ART UNIT

PAPER NUMBER

2637

DATE MAILED: 10/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. <span style="float: right;">OK</span>	Applicant(s)	
	09/886,628	BAUM, KEVIN L.	
	Examiner	Art Unit	
	Sam K. Ahn	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2005.
- 2a) ☒ This action is FINAL.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 7-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1,3,5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tellado et al. USP 6,424,681 B1 (Tellado, cited previously) in view of Jalali et al. USP 6,952,454 B1 (Jalali).

Regarding claims 1 and 6, Tellado teaches a method comprising providing a plurality of subcarriers (see Fig.5 providing subcarrier  $f_0 - f_{N-1}$ ), and a partially loaded multicarrier system, wherein nulls are transmitted on selected ones of the plurality of subcarriers ( $f_1, f_3, f_5...$  wherein the amplitude is zero) during at least one symbol period, and wherein a data symbol is transmitted on at least one of the other subcarriers ( $f_0, f_2, f_4...$  wherein the amplitude has corresponding values) during the symbol period (see 206 in Fig.11 and note col.11, lines 21-34). However, Tellado does not explicitly teach averaging interference in a partially loaded multicarrier system.

Jalali teaches averaging interference in a partially loaded multicarrier system (note col.24, lines 6-10 by allocating sub-channel assignment to be in a pseudo-random manner). Therefore, it would have been obvious to one skilled in the art

at the time of the invention to incorporate the teaching of Jalali in the system of Tellado of transmitting data and nulls in certain subcarriers by allocating subcarriers assignment to be in a pseudo-random manner for the purpose of increasing diversity (as taught by Jalali, note col.24, line 9) and to take advantage of the pseudo-random sequence characteristic, which is well-known to one skilled in the art of providing data while appearing at unintended receivers as white noise.

Regarding claim 3, Tellado in view of Jalali teach all subject matter claimed, as applied to claim 1. Tellado further teaches randomly spacing the nulls on the subcarriers across a channel band (see Fig.5 wherein the subcarriers with zero amplitude are randomly spaced).

Regarding claim 5, Tellado in view of Jalali teach all subject matter claimed, as applied to claim 1. Tellado further teaches offsetting the plurality of subcarriers in frequency as shown in Fig.5 wherein each of the subcarriers have different amplitude being offset for each frequency.

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tellado et al. USP 6,424,681 B1 (Tellado, cited previously) in view of Jalali et al. USP 6,952,454 B1 (Jalali) and Wallace et al., USP 6,473,467 B1 (Wallace, cited previously).

Regarding claim 2, Tellado in view of Jalali teach all subject matter claimed, as applied to claim 1. Tellado, as explained above, teaches transmitting data or

nulls on selective subcarriers. However, Tellado does not teach wherein the nulls are spaced evenly on the subcarriers across a channel band. Wallace also teaches transmitting nulls and data on selective subcarriers (see Fig.1C). By having four transmitting antennas four sets of subcarriers each transmit nulls and data. For Tx1, the nulls are evenly spaced apart by skipping the subcarriers of 0,4,8...24.

Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify Tellado's system by having plurality of transmitting antennas thus separating the subcarriers into different sets for the purpose of increasing the transmission data rate. By combining the two teachings, the subcarriers of Tellado may be aligned as such taught by Wallace.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tellado et al. USP 6,424,681 B1 (Tellado, cited previously) in view of Jalali et al. USP 6,952,454 B1 (Jalali) and Sonning et al., USP 6,781,976 B1 (Sonning, cited previously).

Regarding claim 4, Tellado in view of Jalali teach all subject matter claimed, as applied to claim 1. Tellado, as explained above, teaches transmitting data or nulls on selective subcarriers. However, Tellado does not explicitly teach offsetting the plurality of subcarriers in time. Sonning also teaches transmission of data in plurality of subcarriers or channels (see Fig.2-1) wherein each of the channels are time-offset (note col.13, lines 19-26). Therefore, it would have been obvious to one skilled in the art at the time of the invention to modify

Tellado's transmission of subcarriers by offsetting in time, as taught by Sonning for the purpose of reducing interference between the subcarriers (as taught by Sonning, note col.2, lines 41-43).

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

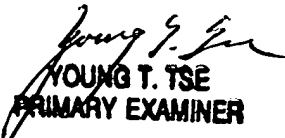
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2637

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam K. Ahn  
10/17/05

  
**YOUNG T. TSE**  
**PRIMARY EXAMINER**